Occupational and Skill Shortages: The Backgrounder

Introduction

Over the past few years there have been growing concerns among employers about existing and potential shortages of qualified workers in a number of sectors of the economy including information technology, construction, health, education and offshore energy.

Concerns have arisen, in part, as a result of rapid growth in employment since the mid-1990's. The past decade has seen a fundamental shift in labour market conditions from a situation of relatively high unemployment with a plentiful supply of available labour to one where employers are having increasing difficulties in finding appropriately qualified workers. Current unemployment rates are lower now than they have been at any time since the mid 1970's. The Nova Scotia unemployment rate has been below 10 percent for the past five years. These are levels previously experienced only briefly at the peak of economic expansions in 1980-81 and 1989.

In Nova Scotia, the anticipation of rapid growth in the offshore oil and gas sector raised serious concerns about the emergence of shortages in a number of occupations required to support that development, particularly in the construction industry. While subsequent offshore exploration has not yet provided a foundation for rapid expansion of that sector, there are lingering concerns about the potential for a number of major construction projects across the Atlantic Region to occur simultaneously, and that this could result in the demand for skilled workers in a number of construction trades that could not be met with the available supply.

Technological and Demographic Change

Changing technologies, resulting in changes in the occupational composition of labour demand and changing skill requirements within occupations, have also raised concerns about shortages. The concern is not only about the numbers of workers in given occupations that are available to meet demand, but also about whether or not the skills of these workers are adequate to working with the new technologies that are being implemented across a broad cross-section of industries.

The most frequently noted characteristic of these changing technologies has been an economy-wide increase in skill requirements. This has been accompanied by a comparable increase in the skill level of the labour force which has changed dramatically as older less educated workers retire from the labour force and as younger more educated workers enter.

Demographic changes have also resulted in concerns about the emergence of shortages in the future. Slowing population growth and an aging population will ultimately limit expansion of the workforce and it is argued that this could result in a situation of economy-wide shortages. There are also concerns that aging workforces, in the education and construction sectors for example, will result in high rates of

retirements in some occupations and that the associated replacement demand will result in situations of shortages.

In summary, the labour market has had to adjust to a series of fundamental changes in recent years and it has had to do so under conditions of tightening labour market conditions with rapid employment growth and with significantly lower unemployment rates.

Occupational and Skill Shortages

When labour markets are in balance, employers are able to find qualified workers to fill vacant positions within a reasonable period of time. Workers seeking employment are also able to find employment suitable to their skills and capabilities within a reasonable period of time. Under conditions of a shortage, it will take employers much longer than usual to find a qualified worker, however, workers will typically be able to find employment within a very short period of time.

Shortages may be economy-wide or they may be confined to particular occupations or skill sets. They may be local in scope or they may be province-wide (or nation-wide). They may be occupation-based, reflecting imbalances in the number of workers available in given occupations; or they may be skill-based, reflecting changing skill requirements within occupations.

Skill shortages also occur in a variety of contexts. They may be seasonal, cyclical or structural:

- Seasonal shortages are associated with a shortage of workers during a specific time or times during the year. As an example, during the fruit-harvesting season in Nova Scotia, it may be difficult to find workers to pick the fruit.
- Cyclical shortages are associated with the business cycle and occur only during peaks in labour market activity. During an economic upswing, employers may increase wages or advertise in order to attract more workers. Due to the fact it takes time for workers to learn about the jobs and relocate to an area of need, there will be a cyclical shortage.
- Structural shortages occur because of changes in the nature of the economy. In a structural shortage, the labour force does not match the skills required for production. Factors that lead to these types of shortages can include demographic changes, technological changes and rapid growth of new industries.

Labour Market Adjustment

Basic economic theory tells us that labour markets will typically adjust to imbalances through changes in wage rates. In "equilibrium", wages are such that the number of workers available for work (the supply) is sufficient to match the number of workers that employers wish to employ (the demand). In conditions of shortage, employers are unable to hire as many workers as they would like (demand exceeds supply). Theory tells that employers will likely compete for the available labour supply by bidding up

wages resulting in the attraction of additional workers and ultimately, this will bring the labour market back into equilibrium.
The reality, of course, is much more complicated. Workers are attracted by a much broader set of considerations, including wages, non-wage benefits and working conditions. Employers may be constrained in what they can offer to workers because they are constrained by the conditions in the markets in which they sell their products. Employers may seek out other means of alleviating a shortage, for example, by introducing new labour-saving technologies.

Barriers to Labour Market Adjustment

There is a broad range of barriers to adjustment, both on the labour supply side and the labour demand side:

Labour Supply

- Potential workers may not know there have been changes in wages or better work opportunities and may have limited knowledge of opportunities in other related occupations and industries
- Increases in demand and level of pay may fail to attract workers
- Many years of education or specialized training might be required to fill a job
- Limited enrolment capacity in training programs that deliver required skills can slow the required increase to labour supply
- Licensing, accreditation and certification processes for the required skill sets may take time or have limited capacity
- Other industries or regions may be competing for workers with the same skills
- Changes in demand or goods and services may outpace the growth of potential workers

Labour Demand

- Employers may not immediately realize there is a shortage and may take additional time to respond (increases in wages, for example)
- Employers may be reluctant or unable to offer higher wages because:
  - Fixed wage structures such as collective agreements may be in place
  - Business may not be sufficiently viable to offer higher wages
  - Industry has traditionally paid lower wages
  - Employers may not be able to reduce minimum entry-level requirements in order to recruit workers to train on the job

The Adjustment Process

The issues associated with labour market adjustments to eliminate shortages depend on the nature of the shortage and the barriers to adjustment that need to be overcome:

- A general economy-wide labour shortage within a local or provincial labour market can be addressed through migration or immigration, or through changes in technology that reduce labour requirements.
- A shortage associated with inadequate wages and working conditions can to be addressed by changes in the recruitment and retention strategies of employers, although there may be significant barriers (noted above) to accomplishing this; by changes in institutional arrangements such as collective agreements; etc.

- A shortage associated with an inadequate number of people in the workforce with the appropriate skills can be addressed through a variety of means including: migration or immigration; expansion in opportunities for training; retraining and upgrading; changes in hiring standards; enhanced employer human resource practices including on-the-job training; recruitment/retention strategies and succession management; changes in technologies used in the workplace that help to reduce requirements for skills in shortage; and inter-occupational flows where there are commonalities in required competencies.

Information and Labour Market Adjustment
Probably the most important means of facilitating the labour market adjustment mechanism is to ensure that labour market participants have access to reliable labour market information to support effective decision-making.

> *"An effective well-functioning labour market that is responsive to a continually changing economic environment requires effective decision making by all labour market participants: individuals, employers, the organizations that represent them, education and training institutions and governments. The key to effective decision making is access to accurate, timely and relevant local labour market information." ("Labour Market Information and Human Development; Canada - Nova Scotia Skills and Learning Framework Policy Paper," April 2003).*

Good information, coupled with effective search strategies (workers) and effective recruitment and retention strategies (employers), and the ability of both to adapt to a changing environment, should ensure that labour markets function well in the absence of occupational/skill imbalances.

Labour market participants also require reliable labour market information to support long term decision-making: workers in making career decisions and in considering their education and training options, employers in developing human resource strategies, and educators/trainers in making program decisions. Access to information about long term trends in industrial and occupational supply and demand to support these decision-making processes can, therefore, have a significant impact on the effectiveness with which labour markets can support the economic development process.

Addressing Labour Market Information Needs: Present Practices

It is critical efforts to address labour market information are supports to government policy and program initiatives and address the decision making needs of labour market participants include comprehensive approaches, which seek to assess current and likely future labour market conditions across the economy, and sector specific approaches.

Comprehensive Approaches
The Canadian Occupational Projection System (COPS) provides projections of industrial and occupational employment for Nova Scotia. The model is based on a Conference Board of Canada macroeconomic and industry forecast (33 industries) developed with input from provincial and HRDC regional COPS partners. The industry

employment forecast is converted by the COPS partnership to an occupational employment forecast providing employment projections for 511 occupations as defined in the National Occupational Classification (NOC).

The advantage of this approach is that it provides a forward-looking view of trends in industrial and occupational labour markets. It does, however, have significant limitations:

- The Conference Board forecast (and other national economic forecasts) is primarily national in scope and incorporates limited detail on conditions in provincial economies (especially the smaller provinces).
- Data available for use in provincial model development (from such sources as the Statistics Canada Labour Force Survey) is limited. Important components of the provincial models use national data. The Forum of Labour Market Ministers' (FLMM) Labour Market Information Work Group is working to prepare a business case and action plan to address these needs (at least over the long term).
- The forecasting models themselves have significant limitations at the provincial level. They do not provide any information about the supply side of the labour market. Nor do they provide good information about replacement requirements associated with retirements. The COPS partnership and the FLMM Labour Market Information Work Group are working to address some of these issues.
- They are provincial in scope and cannot provide a foundation for the identification and analysis of shortages in sub-provincial labour markets.
- They focus on occupations not skills, and do not provide any means of identifying skills issues within occupations.
- Modeling approaches are critically important, but by themselves, are limited in their capabilities.

The COPS model is complemented by work to monitor labour market conditions. Human Resources Development Canada collects information on labour market conditions in local economies. This provides a foundation for the preparation of High Opportunity – Low Opportunity Occupation lists (HOO-LOOs). The production of province wide HOO-LOO lists will be developed through a review of the local HOO-LOOS, the COPS projections, and other indicators (such as numbers of EI Beneficiaries and information available from other studies by sector councils).

To develop more reliable information about current and future occupational and skill shortages, the COPS models and the monitoring activities of HRDC could be complemented by efforts to develop and assess labour market information from other sources, such as:

- Development of additional labour market information datasets and the preparation of indicators of labour market conditions.
- Development and use of employer surveys to capture meaningful information about occupational/skill imbalances.
- Development of effective measures to monitor labour market conditions on an ongoing basis.

Sector Specific Approaches
A number of public and private sector organizations also work to develop a better understanding of labour market conditions in specific economic sectors and occupations. This includes initiatives and projects on sectors such as offshore oil and gas, construction, information technology, biotech, aerospace, as well as individual occupations such as public school teachers and health related occupations.

Government Policy and Program Interventions

The perception of existing shortages and the prospect that shortages will emerge in the future, as a result of economic growth and demographic change, has resulted in considerable pressures on governments to take action and to support and implement initiatives to address occupational and skill imbalances.

Governments may need to consider policy and program initiatives to ensure that labour markets function effectively, for example, by facilitating the development of effective search strategies by job seekers and by supporting the development of effective recruitment and retention practices by employers.

When adjustment in the labour market does not occur, due to many of the factors noted above, government action, such as providing support for employer sponsored training, may help achieve a solution. However, an extensive knowledge of the different labour markets is needed. Not only must the markets identifying shortages be identified, but the nature of the shortages must be taken into account in determining what action is required.

Governments need to consider options for the development of mechanisms and information resources to support effective long-term decision-making by labour market participants including career decision makers, employers and educators and trainers. This can also provide effective supports for other policy initiatives such as the development of an immigration strategy.

Occupational and Skill Shortages: The Highlights

Over the past few years there have been growing concerns among employers about existing and potential shortages of qualified workers in a number of sectors of the economy. The following definitions and descriptions are provided to help frame discussions regarding these issues.

Definition of Shortages

A shortage is a situation where employers have difficulties finding qualified workers to fill available positions.

Types of Shortages

Shortages associated with wages, working conditions, etc. that are unattractive to potential employees

Shortages associated with inadequate numbers of qualified workers in the workforce

Characteristics of shortages

Shortages may be economy-wide or they may be confined to particular occupations or skill sets.

They may be local in scope or they may be province-wide (or nation-wide).

They may be occupation-based, reflecting imbalances in the number of workers available in given occupations; or they may be skill-based, reflecting changing skill requirements within occupations.

They may be seasonal, cyclical or structural.

Labour Market Adjustments to Eliminate Shortages

A shortage situation typically results in labour market adjustments that will, over time, eliminate the shortages:

- General economy-wide labour shortage within a local or provincial labour market can be addressed through:
  - Migration or immigration, or
  - Changes in technology that reduce labour requirements

- Shortages associated with inadequate wages and working conditions can to be addressed by:
  - Changes in the recruitment and retention strategies of employers, although there may be significant barriers (see below) to accomplishing this;
  - Changes in institutional arrangements such as collective agreements; etc.

- A shortage associated with an inadequate numbers of people in the workforce with the appropriate skills can be addressed through a variety of means including:

- Migration or immigration;
- Expansion in opportunities for training, retraining and upgrading;
- Changes in hiring standards;
- Enhanced employer human resource practices including on-the-job training, recruitment and retention strategies, and succession management;
- Changes in technologies used in the workplace that help to reduce requirements for skills in shortage; and
- Inter-occupational flows where there are commonalities in required competencies.

Finally, the most important means of facilitating the labour market adjustment mechanism is to ensure that labour market participants have access to reliable labour market information to support effective decision-making.

Barriers to Labour Market Adjustment

A variety of barriers may interfere with the labour market adjustment process, including:

- Lack of labour market information
- Financial constraints on employers, possibly related to conditions in the market where they sell their products and services
- Institutional arrangements such as collective agreements, regulations and licensing requirements and legislation
- Required skills may not be readily available in the broader labour force- many years of education or specialized training might be required
- Adjustments may require relocation of workers which can be costly

The Identification and Assessment of Skill Shortages

Work is underway to develop better information, methodologies and tools to identify shortages and assess barriers to labour market adjustment. The Department of Education and its partners are preparing a Request for Proposals to develop a methodology. The Forum of Labour Market Ministers (FLMM) Labour Market Information Work Group is preparing an action plan to address issues related to data requirements. The Canadian Occupational Projection System (COPS) Partnership is working to develop better projection models that will provide better information about existing and potential future shortages.